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Every subscription will be promptly acknowledged by a formal souvenir receipt, bearing the portrait of Lavoisier in prison. The original individual subscription papers will be bound and deposited in the Archives of the Academy.

While the American committee was rather late in beginning its work, we are advised that its efforts are slowly bearing fruit. Let every one who reads these lines join in the good work, giving money in accordance with his means and his regard for the conquests of the pioneer who wrought so well in laying the fundamentals of chemical science.

EDGAR F. SMITH.

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SCIENTIFIC LITERATURE.

List of the Vertebrated Animals now or lately living in the Gardens of the Zoological Society of London. London, Longmans, Green & Co. Ninth edition. 1896. Pp. xvi+724.

The preface to this work states that its principal object is to facilitate the naming of specimens and to render nomenclature uniform. It is merely a transcript of the Society's register of accessions illustrated by a few cuts from the proceedings. Its value would have been greatly increased had there been added statistics showing the number of each species present, the average life of each and the number and causes of the deaths. As the volume treats of all animals that have been in the garden during 12 years past, and embraces 2,557 species, a vast amount of information might thus have been given which would have been of great benefit not only to those having collections in charge, but to pathologists and biologists generally.

We are able to gather from the list some idea of the number and kinds of animals born in the gardens during this period and thus judge how far the conditions were favorable for breeding. Some rather unexpected results are met with. We will consider the mammals only. The lemurs breed much more freely than monkeys; the lion is the only one of the cat tribe that is prolific, though our own puma is credited with five births. Among Esquimaux dogs there were but 9 births; the dingo has 15. From an apparently large number of raccoons but

8 were born, and among 52 squirrels (*Sciurus vulgaris*, common to the British islands) there were no births. On the other hand 14 beaver (*Castor canadensis*), 6 bison (*B. americanus*), 19 American elk, or Wapiti (*Cervus canadensis*), 35 mule deer (*Cariacus macrotis*) were born. The South African fruit bats (*Cynonycteris collaris*) produced 44, and the gerbilles, rat-like animals from western Asia and North Africa, threatened to become a nuisance, the birth of no less than 225 being recorded. Other notable births were 47 coypus, 13 yaks, 11 gayals (*Bibos frontalis*), 18 Himalayan sheep (*Ovis burrhel*) 15 Barbary sheep (*Ovis tragelaphus*), 43 Japanese deer (*Cervus sika*), many kangaroos and phalangers.

Certain species that breed freely in American zoological collections appear not to have bred at all or but rarely. Among these may be mentioned our coyote, prairie dog and chipping squirrel (*Tamias striatus*) the collared peccary, the Virginia deer, and even some domesticated animals like the camel, the llama and the zebu. Some of these results could doubtless be explained were the circumstances of each case fully known.

FRANK BAKER.

SMITHSONIAN INSTITUTION.

Genius and Degeneration. A Psychological Study. By DR. WILLIAM HIRSCH. D. Appleton & Co. 1896.

This work is published in the same style type as Nordau's 'Degeneration' and is announced as an answer to the latter work. An accompanying circular assures us that Dr. Hirsch 'absolutely refuses to accept Dr. Nordau's conclusions.' This at once removes a good deal of tension from the inquiring critic and leaves him the simpler tasks of finding out who it is that thus deals in the absolute and what are his reasons for so firm an implantation of himself upon an adverse position. The opening chapters of the book discuss the position of modern psychiatry and the nature of insanity and of genius. It is shown that neither of these latter things represents a very definite psychological concept. The author then takes up the relations of genius and insanity to each other. He shows that they are not identical and that "genius resembles insanity as gold resembles

brass'—a similitude that can hardly be called convincing. In this chapter he also attacks the position of Lombroso and those few alienists who teach that genius is a morbid psychosis. We feel sure that Dr. Hirsch is in close harmony with the views of most modern alienists in this argument, and that he opens himself to no criticism, except, perhaps that he tells us only what is generally known; but Dr. Hirsch writes lucidly and with learning upon this subject. In his criticism on the attempts to make out a large number of great men epileptics or hallucinants, we note a little deficiency in his description of Luther's historical hallucination about the devil. The completed story leaves little doubt that Luther did have such a hallucination, though the fact is not very significant or important. The next chapter, on 'degeneration,' is an excellent description of this condition and so much in harmony with the views of Nordau that we are left wondering where the antagonism between the author and the Nordau monster is to appear. Up to the middle of the book, in fact, the two authors might coo together like turtle doves. It is in the last three chapters on 'Secular Hysteria,' 'Art and Insanity,' 'Richard Wagner and Psychopathology,' that we find Dr. Hirsch tasking his resources and his rhetoric in showing the errors and extravagances of his opponent. These chapters are interesting, but are essentially polemical and do not have any particular bearing on Genius and Insanity—a fact which does not matter very much except in marring the scientific physiognomy of the book. Dr. Hirsch denies that this is an age of hysteria and of neuropathic temperaments. Unfortunately he does not furnish any particular facts in support of his denial. He says, "spiritualism has in the main died out," but this is not the case in the United States at least. He cites the epidemics of hysteria of the Middle Ages as evidence of psychopathy in those times; but their existence, it may be fairly assumed, was not by any means proof of a prevalent neuropathy as much as it was of ignorance, religious zeal and church politics. No doubt very sturdy and lethargic natures danced with the rest of the populace in the epidemics of those times and did it out of a healthy fright,

or puerile imitativeness or ignorant passion. The existence of false beliefs among an untutored race does not argue degeneracy by any means. The question at issue is in reality simply this: Whether there are or are not more neuropathic people per hundred of the population now than a century or two centuries ago. We confess to the opinion that there is now more of this neuropathic constitution. The statistics of crime, alcoholism, insanity and nervous diseases; the fact that a larger proportion of the population are brain workers living on a higher mental plain than in former times; the diffusion of syphilis, the stimulating influences of modern civilization, the press, the telegraph, the railroad; the gradual increase of urban at the expense of rural populations, all justify this position, which I believe only a blind or sentimental optimism can deny. This does not necessarily mean, however, that we are 'in the midst of a black death of degeneracy and hysteria,' but only that there we have now proportionately more nervous systems which are highly organized and unstable. We doubt if even Dr. Hirsch will deny this, and it is mainly the exaggerated and intense emphasis laid upon the matter by Nordau which has brought out such a crop of amateur optimists. We are, I should add, combating this condition with ever increasing diligence and, I trust, success.

There seems to be little doubt that a man may be insane and still produce art of a high, if not of the highest quality. Here is where an endless controversy, however, is let in. For one party asserts that certain art work is of the highest class, hence the author is not insane. The other, with equal positiveness, avers that the man is insane, hence his work can not be of the highest class. I do not propose to be dropped into this controversial cauldron. It is, I believe, however, a pretty safe thesis to say that if a man is insane his work cannot be of the highest class or rank with that of a genius, since the fundamental quality of insanity is a more or less completely developed dementia, and a certain positive defect in the association processes. This has not prevented men of genius, originally sane, from doing some kinds of great work after mental disease had come upon them, through the sheer inertia of their marvelous aptitudes.

Dr. Hirsch devotes nearly one-third of his book to the defense of Richard Wagner. He must have felt that his hero was hard pressed. The great majority of his readers will, no doubt, believe that he has maintained his thesis and established his hero on a sane and solid basis. We are not at all unwilling to accept his position. But it is an interesting fact that the Wagner vogue, aside from Germany, has reached its greatest popularity in this country, a land which has, with equal fervor, taken to its heart spiritualism, homœopathy, Christian science and free coinage. Dr. Hirsch has, in general, reasoned well and shown both the learning of an alienist and the scholarship of a literateur. But we are grieved to see him descend to the cheap sophism that Nordau, by his own rules, has shown himself a degenerate. This brilliant touch has been applied before by three-fourths of the penny-aliners who have attacked his work. While it may be suggested by Nordau's extravagant invective, it is simply not a logical retort. For it makes no difference what the author of an argument is. It is the force of the facts upon which it is based that concerns the critic.

CHARLES L. DANA.

NEW YORK.

SCIENTIFIC JOURNALS.

AMERICAN JOURNAL OF SCIENCE.

THE March number opens with an article by J. S. Diller, of the United States Geological Survey, describing Crater Lake, in southern Oregon. This lake is situated in the summit of the Cascade Range, and, notwithstanding the interest of its geological history and the beauty of the natural scenery, a comparatively small part of the scientific public is acquainted with its features. The nearly circular rim of the lake has an average diameter of six miles and rises 1,000 feet above the general level of the range. The slope without is gentle, but within quite precipitous. The general appearance is that of the hollow base of a large and deeply truncated cone, filled within by the waters of the lake. The crest of the rim varies in height from 6,700 to 8,200 feet above the sea, or from a little more than 500 to nearly 2,000 feet above the waters of the lake. The rim is composed of lava streams and beds of volcanic con-

glomerate, which dip away from the lake. The prevailing rock is andesite, but rhyolites are common along the later flows and these are largely associated with pumice. A number of vertical dikes intersect the rim, the largest of which is known as the Devil's Backbone. Within the lake is an island called Wizard's Island, which consists of a steep cinder cone 845 feet in height, surmounted by a perfect crater 80 feet in depth and encircled by a rough lava field. According to soundings taken by Dutton in 1886, other prominences of this kind exist at the bottom of the pit. The rim of the lake has been extensively glaciated, and the study of the glacial striæ and moraines gives evidence of the changes which have taken place since the glacial period.

After discussing the prominent features of the locality, some of which are here alluded to, the author concludes that in the glacial period the site of Crater Lake was occupied by an active volcano about the height of Mt. Shasta; this has been called Mt. Mazama. Its sides were glaciated by the descending ice streams, and moraines were deposited about its base. The author concludes as follows:

"The later eruptions of Mt. Mazama occurred in the glacial period and doubtless produced extensive floods which filled with débris the valleys of all the streams radiating from the mountain. In approximate connection with its final eruption, the molten material of the interior withdrawing, the summit of Mt. Mazama caved in and sank away, giving rise to a caldera nearly six miles in diameter and 4,000 feet deep. Thus originated the great pit in which Crater Lake is contained, encircled by a glaciated rim, the hollow base of the engulfed Mt. Mazama. Upon the bottom of the caldera volcanic activity continued. There were new eruptions building up cinder cones and lava fields and partially refilling the great pit. Precipitation is greater than evaporation in that region. Volcanic activity ceasing, the conditions were favorable for water accumulation and Crater Lake was formed in the pit."

F. D. Adams and A. E. Barlow discuss the origin and relations of the Grenville and Hastings series in the Canadian Laurentian. This is in continuation of an earlier paper by the